

April 5. Reny Hu, Jet Propulsion Laboratory.

“Studying Planetary Atmospheres in an Exoplanet Era”

The number of planets we know increased by two orders of magnitude in the past decade. Many of the planets discovered beyond our solar system, i.e., exoplanets, have surprising traits, including having orbital periods of a mere few days, being larger than Earth and smaller than Neptune, and having atmospheric compositions where data suggest deviation from chemical equilibrium. These discoveries necessarily reorient our study of planetary atmospheres. I will discuss how observations of exoplanet atmospheres help us better understand the physical and chemical processes that control planetary atmospheres as well as the evolution of planets. For example, strong stellar irradiation and intermediate size of some exoplanets enable the formation of helium atmospheres, resulting in distinctive remote sensing spectral features. Observations of Hubble and JWST thus provide the opportunity to study the atmospheric evolution of super-Earths and sub-Neptunes. Looking ahead, I will conclude by describing pathways forward to characterize cold planets at wide orbital separations and search for potential signs of habitability from these distant worlds.

April 12. Erin Leonard, UCLA

“Europa at all scales: analyzing global to high-resolution images to constrain surface evolution”

The young (<100 Ma) surface of Jupiter’s icy satellite Europa raises the key questions: What are the resurfacing mechanisms causing Europa to have a young surface, and how have these processes evolved through time? To address these questions we map and analyze (1) the USGS global image mosaic of Europa and (2) nine high-resolution frames obtained by the Galileo Solid State Imager (SSI) during the E12 flyby of Europa in Dec. 1997. From this analysis we find that local-scale resurfacing mechanisms have transitioned from distributed to discrete deformation, expressed by the transition in the formation of the ridged plains to the formation of chaos and isolated fractures. This finding is consistent with simultaneous ice-shell thickening and cooling occurring as the ice-shell deformed. In this talk, I will discuss the analysis and mapping of the global and high-resolution images and propose a synthesized hypothesis for the cyclic deformation that shapes Europa’s icy surface.

April 19. Nigel Kelly, Univ. Colorado

“Using zircon (U-Th)/He thermochronometry and thermal history modeling to constrain impact histories - an example from lunar impact melt breccia 14311”

April 26. Sean Falk, UCLA

“Surface-atmosphere connections on Titan”

May 3 Jonathan Fortney, Univ. California Santa Cruz

May 10 Ashna Aggarwal, Yufan Xu, and Emily Hawkins UCLA
Three dynamos for three amigos

May 17 Jing Luan, Univ. California Berkeley

- May 24** **Mathieu Choukroun, Jet Propulsion Laboratory**
“Clathrate hydrates, ammonia, and interior-atmosphere exchanges on Titan”.
- May 31** **student presentations, TBD**
- June 7** **David Paige, UCLA**